Do different scratch mats influence hen behaviour in enriched cages?

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Do different scratch mats influence hen behaviour in enriched cages?

Sunday, 1st August - 18:00: Farm Animal Housing and Enrichment posters - Poster

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The EU Directive on laying hens says 'laying hens must have... litter such that pecking and scratching are possible'. In enriched (furnished) cages, litter is typically provided as layer's mash ("scratch feed") on a mat, but there are no requirements for mat size, location or makeup. Commercial furnished cages offer various scratch mat materials and sizes, which may influence behaviour. This study compared hen behaviour on four mat designs.

A commercial shed with 60-bird Big Dutchman (BD) cages was used. Cages were arranged over six banks and nine tiers. Twenty-four cages in banks 2-5, tier 5 (6 cages/bank) were used. Cages contained two scratch mats. Prior to flock arrival, some BD mats were replaced with other mat types in a balanced design, so that mats were equally represented across banks, cage locations, and cage sides. All mat pairs/cage were of two different designs: BD, Kovobel (K), Valli (V), or Zucami (Z), which varied in size, shape, and colour. Mat areas (cm^2) were: 927.5 (BD), 579.5 (K), 806.4 (V), and 2016.0 (Z). Hen behaviour at the mats was recorded at three observation points relative to scratch feed application at 30, 50 and 79 weeks of age. Observations were 1^{st} (1 h 40 min-4 h 45 min since last scratch feed), 2^{nd} (during/immediately after scratch feed), 3^{rd} (40 min-1 h since last scratch feed). At the 2^{nd} observation, only half the cages were observed (balanced for mat designs) to capture behaviour when scratch feed was most likely to be present. Behaviour proportions were analysed using Generalised Linear Mixed models (GLMMs) for binomial data, with logit link, and Linear Mixed models (LMMs) on angular transformed data. Fixed effects were age, observation, mat type and their interactions; random effects were bank, cage, cage.age, cage.age.observation and cage side within cage. Analyses shows results back transformed to proportions. This study was ethically approved by SRUC's AWERB.

Proportions of birds on the mats overall were low and declined from 30 and 50 weeks to 79 weeks (0.028, 0.030, and 0.020, respectively; $P<0.001$). More birds were observed on Z ($P<0.001$), but relative to mat area, most birds were seen on K ($P<0.001$). Mat types had little influence on foraging behaviour. Foraging was highest when scratch feed was present (1st 0.000, 2nd 0.015, 3rd 0.000, $P<0.001$), but the amount of time observed foraging overall was small, and there was no evidence to suggest that mat design influenced foraging behaviour.